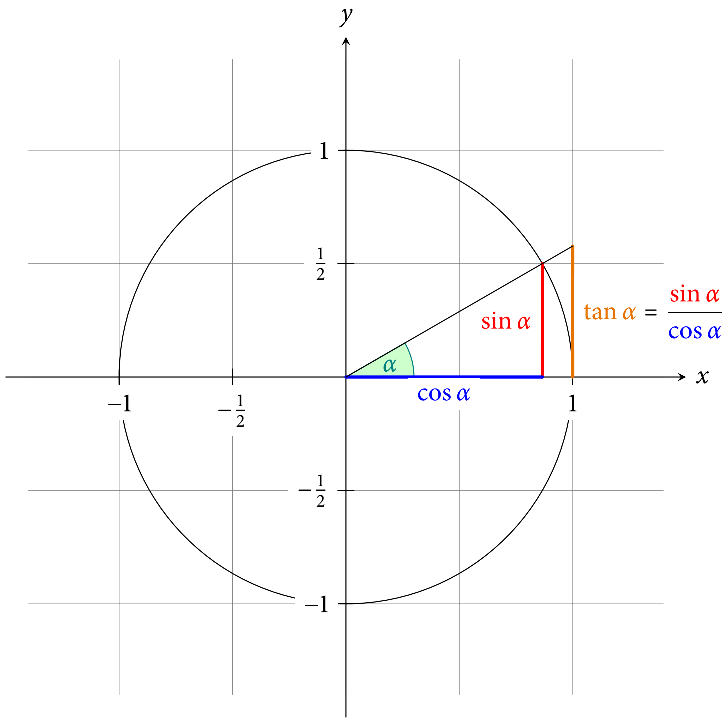
1 A TRIGONOMETRY EXAMPLE



The angle α is 30° in the example ($\pi/6$ in radians). The sine of α, which is the height of the red line, is

$$\sin\alpha = \frac{1}{2}.$$

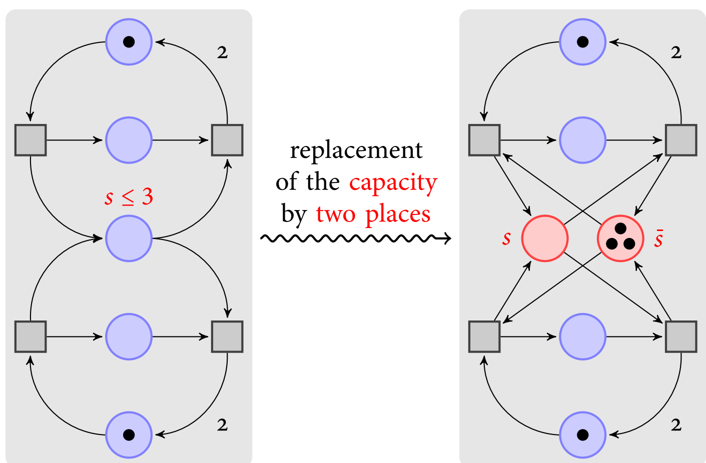
By the Theorem of Pythagoras we have $\cos^2\alpha + \sin^2\alpha = 1$. Thus the length of the blue line, which is the cosine of α, must be

$$\cos\alpha = \sqrt{1 - \frac{1}{4}} = \frac{1}{2}\sqrt{3}.$$

This shows that $\tan\alpha$, which is the height of the orange line, is

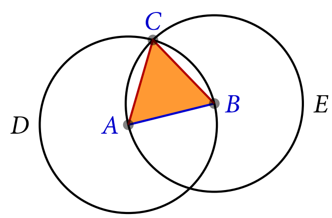
$$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{1}{\sqrt{3}}.$$

2 PETRI-NETS



3 EUCLID'S ELEMENTS

3.1 *Book I, Proposition I*



Proposition I
To construct an equilateral triangle on a given finite straigt line.

Let AB be the given finite straight line. It is required to construct an equilateral triangle on the straight line AB.
Describe the circle BCD with center A and radius AB. Again describe the circle ACE with center B and radius BA. Join the straight lines CA and CB from the point C at which the circles cut one another to the points A and B.
Now, since the point A is the center of the circle CDB, therefore ACequals AB. Again, since the point B is the center of the circle CAE, therefore BC equals BA. But AC was proced equal to AB, therefore each of the straight lines AC and BC equals AB. And things which equal the same thing equal one another, therefore AC also equals BC. Therefore the three straight lines AC, AB, and BC equal one another. Therefore the triangle ABC is equilateral, and it has been constructed on the given finite straight line AB.

3.2 *Book I, Proposition II*